

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

RULE 1469.1 - SPRAYING OPERATIONS USING COATINGS CONTAINING CHROMIUM

(Adopted March 4, 2005)

(a) Purpose

The purpose of this rule is to reduce hexavalent chromium from spray coating operations.

(b) Applicability

This rule shall apply to any operation in which coatings containing hexavalent chromium are sprayed, with the exception of thermal spraying operations. Compliance with this rule shall be in addition to other applicable rules.

(c) Definitions

For the purpose of this rule the following definitions shall apply:

- (1) APPROVED HEALTH RISK ASSESSMENT means a health risk assessment prepared pursuant to Rule 1402 that is approved by the Executive Officer.
- (2) CAPTURE EFFICIENCY is the percentage of the mass of the solids fraction of overspray that is collected and directed to an air pollution control device.
- (3) CHROMATE is any salt or ester of chromic acid. For the purpose of this rule, chromate means strontium chromate, zinc chromate, lead chromate, barium chromate, calcium chromate, and any other chromate used in primers or coatings for corrosion protection or other properties.
- (4) COATING is a material which is applied to a surface and which forms a film in order to beautify and/or protect such surface.
- (5) COATING APPLICATION EQUIPMENT are those used for applying coating to a substrate. Coating application equipment includes coating distribution lines, coating hoses, pressure-pots, spray guns, and hand-application equipment, such as hand-rollers, brushes, daubers, spatulas, and trowels.
- (6) COMPLIANCE PLAN APPROVAL LETTER is the official notice of approval for a Compliance Plan.

- (7) CONTROL EFFICIENCY is the difference between the uncontrolled and the controlled total emissions divided by the total emissions and multiplied by 100. Control efficiency is represented by the following equation:

$$\eta = \frac{T_u - T_c}{T_u} \times 100$$

Where η = Control Efficiency.

T_u = Uncontrolled Emissions of Hexavalent Chromium

T_c = Controlled Emissions of Hexavalent Chromium

- (8) ELECTROSTATIC APPLICATION is charging of atomized paint droplets for deposition by electrostatic attraction.
- (9) EQUIPMENT includes the spray gun or other application device, the booth, enclosure or other area in which the spraying process occurs, and the associated air pollution control equipment.
- (10) EXHAUST COVERING means a material placed in front of existing filters and pre-filters, that is located on the inside of a spray enclosure and that is not part of the designed filter system.
- (11) EXISTING AIR POLLUTION CONTROLS means all control equipment existing as of March 4, 2005.
- (12) EXISTING SCHOOL means any school, public or private, kindergarten through grade 12, existing as of March 4, 2005.
- (13) EXISTING SOURCE or SOURCE means any process where spraying primers or coatings containing chromium that is operating on or before March 4, 2005.
- (14) FACILITY means any source or group of sources or other air contaminant-emitting activities which are located on one or more contiguous properties within the District, in actual physical contact or separated solely by a public roadway or other public right-of-way, and are owned or operated by the same person (or persons under common control), or an outer continental shelf as determined in 40 CFR Section 55.2. Such above-described groups, if non-contiguous, but connected by land carrying a pipeline, shall not be considered one facility. Sources or installations involved in crude oil and gas production in Southern California Coastal or Outer Continental Shelf (OCS) Waters and transport

of such crude oil and gas in Southern California Coastal or OCS Waters shall be included in the same facility which is under the same ownership or use entitlement as the crude oil and gas production facility onshore.

- (15) HAND APPLICATION METHOD is the application of materials by manually held, non-mechanically operated equipment. Such equipment includes paint brushes, hand rollers, caulking guns, trowels, spatulas, syringe daubers, rags, and sponges.
- (16) HIGH EFFICIENCY PARTICULATE ARRESTORS (HEPA) means filter(s) rated at 99.97% or more efficient in collecting particle sizes 0.3 microns or greater in size.
- (17) HIGH-VOLUME, LOW-PRESSURE (HVLP) SPRAY is a material application system which is operated at air pressure of between 0.1 and 10 pounds per square inch gauge (psig).
- (18) NEW SOURCE means any source spraying primers or coatings containing chromium that is initially operated in the South Coast District after March 4, 2005.
- (19) OPEN FACE ENCLOSURE, for the purpose of this rule means a spray enclosure in which one face of the enclosure is not enclosed, and air flows through the open face horizontally. Open face enclosure does not include any enclosure configured for downdraft ventilation.
- (20) OVERSPRAY is the fraction of coating sprayed that does not adhere to the intended surface.
- (21) PRIMER is a coating applied to a part for purposes of corrosion prevention, protection from the environment, functional fluid resistance and/or adhesion of subsequent coatings, adhesives, or sealants.
- (22) RECEPTOR means any off-site location where persons may be exposed to emissions of hexavalent chromium from a source subject to this rule. Receptor locations include residential, commercial, and industrial land use areas, and other locations where sensitive populations may be located.
- (23) RESIDENTIAL RECEPTOR means a single family dwelling or a multi-family dwelling, including but not limited to a duplex, condominium, townhome, apartment building, or other rental unit.
- (24) RESPONSIBLE OFFICIAL means one of the following:
 - (A) For a corporation: A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy or

decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities and either:

- (i) The facilities employ more than 250 persons or have gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars); or
 - (ii) The delegation of authority to such representative is approved in advance by the Executive Officer.
- (B) For a partnership or sole proprietorship: a general partner or the proprietor, respectively.
- (C) For a municipality, state, Federal, or other public agency: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of the U.S. Environmental Protection Agency [U.S. EPA]).
- (D) For sources (as defined in this rule) applying for or subject to a Title V permit: “responsible official” shall have the same meaning as defined in District’s Regulation XXX.
- (25) SENSITIVE RECEPTOR includes schools, public and private (kindergarten through grade 12), licensed daycare centers, hospitals, and convalescent homes.
- (26) SPRAYING OPERATION or SPRAYING PROCESS, for the purpose of this rule, includes the equipment used to spray coatings containing chromium, and the spray enclosure in which it is sprayed. Spraying operation or spraying process includes all spraying of primers or coatings containing chromium, except for thermal spraying operations.
- (27) THERMAL SPRAYING OPERATIONS are one of several processes in which metallic or nonmetallic surfacing materials are deposited in a molten or semi-molten condition on a substrate to form a coating. The surfacing material may originate in the form of powder, rod, or wire before it is heated, prior to spraying and deposition. Thermal spraying operations include: detonation gun spraying, flame spraying, high-velocity oxy-fuel spraying, plasma spraying, and twin-wire electric arc spraying.

- (28) TOUCH UP AND REPAIR OPERATION is that portion of the coating operation that is the incidental application of coating used to cover minor imperfections in the coating finish or to achieve complete coverage.
- (29) TRANSFER EFFICIENCY is the ratio of the weight or volume of coating solids adhering to an object to the total weight or volume, respectively, of coating solids used in the application process, expressed as a percentage.

(d) Requirements

Any person applying a coating containing chromium shall comply with all of the following requirements:

(1) Control System Capture Efficiency and Enclosure Standards

On and after July 1, 2007, a person shall not spray primers or coatings containing chromium unless such operations are conducted in a manner in which all overspray containing chromium is captured and directed to air pollution control equipment which is operating during spraying operations. Spray enclosures shall meet the following criteria:

- (A) Exhaust from all spray enclosures shall be ventilated such that a continuous inward flow of air is maintained at all air openings during spraying operations; and
- (B) The average inward face velocity of air through an open face enclosure shall be a minimum of 100 feet per minute or other minimum velocity approved by the Executive Officer; and
- (C) After spraying operations have ceased, the exhaust system shall be kept in operation to remove contaminated air within the spray enclosure for a minimum of:
 - (i) three air exchanges within the spray enclosure; or
 - (ii) five minutes.

(2) Transfer Efficiency

On and after January 1, 2006, a person shall not apply primers or coatings containing chromium at a facility at which such coatings are sprayed unless they are applied according to operating procedures specified by the equipment manufacturer, or applicable permit conditions, and by use of one of the following methods:

- (A) Flow Coater, Roll Coater, or Dip Coater; or
- (B) Hand Application Methods; or
- (C) High-Volume, Low-Pressure (HVLP); or

- (D) Electrostatic Application; or
 - (E) Such other alternative application methods as are demonstrated to the Executive Officer, using District-approved procedures, to be capable of achieving at least equivalent transfer efficiency to the method in subparagraph (d)(2)(C) and for which written approval of the Executive Officer has been obtained.
- (3) Requirements for Facilities Spraying Primers or Coatings Containing Chromium

Before July 1, 2007, the owner or operator of a facility with one or more new or existing sources subject to this rule shall comply with one of the following:

- (A) Provided a facility does not emit hexavalent chromium except through sources subject to this rule, the owner or operator of a facility shall demonstrate in a Compliance Plan submitted pursuant to paragraph (d)(4) that emissions of hexavalent chromium from all spraying operations do not exceed the emission limits in clause (d)(3)(A)(i) or (d)(3)(A)(ii), as appropriate, as calculated after air pollution controls, where applicable, in accordance with the procedures in Appendices 1 and 2.:
 - (i) 0.018 lbs per year, calculated from July 1 through June 30 of each year, or applicable emission limit adjusted for receptor distance and operating schedule in Table 2-2, if a facility is located more than 25 meters (82 ft) from a residential or sensitive receptor; or
 - (ii) 0.007 lbs per year, calculated from July 1 through June 30 of each year, if a facility is located 25 meters (82 ft) or less from a residential or sensitive receptor, or located 100 meters (328 ft) or less from an existing school; or
- (B) Ventilate each source at a facility to air pollution control equipment with a rated particulate filtration efficiency of 99.97% or higher, for particulate matter 0.3 microns and larger; or
- (C) Demonstrate that facility-wide emissions of all toxic air contaminants result in a cancer risk at all receptor locations through submittal of an approved health risk assessment that reflects representative operating conditions, or submittal of a Risk Reduction Plan developed pursuant to Rule 1402 that is fully

implemented prior to July 1, 2007, or submittal of evidence of enforceable permit conditions that limit cancer risk to:

- (i) 25 in a million if a facility is located more than 25 meters (82 ft) from a residential or sensitive receptor; or
- (ii) 10 in a million if a facility is located 25 meters (82 ft) or less from a residential or sensitive receptor, or located 100 meters (328 ft) or less from an existing school.

(4) Compliance Plan

(A) On or before January 1, 2006, the owner or operator of an existing source complying with the requirements of subparagraph (d)(3)(A), or an existing source complying with the requirements of subparagraph (d)(3)(C) that does not have an approved health risk assessment as of January 1, 2006 shall submit a Compliance Plan to the Executive Officer subject to plan fees specified in Rule 306. The Compliance Plan shall include the following information:

- (i) Facility name, address and contact person; and,
- (ii) SCAQMD permit numbers or application numbers for all equipment subject to this rule; and,
- (iii) Calculations for annual emissions of hexavalent chromium, for any twelve consecutive months of data during calendar years 2004 and 2005, except as approved by the Executive Officer. Emissions shall be calculated in accordance with the procedure in Appendix 1; and,
- (iv) Material Safety Data Sheets (MSDS) for all products which list chromium, hexavalent chromium or a chromate, used in a source subject to this rule; and,
- (v) Information on nearby receptors, including the distances to the nearest residence, commercial or industrial receptor, sensitive receptor and school, measured in accordance with the procedure in Appendix 2; and,
- (vi) Information on spraying operations, including the number of gallons sprayed per year for each product containing chromium or chromate, except as approved by the Executive Officer, and type of spray method; and,

- (vii) Information on emission release parameters, including height of stack for emissions released from a stack, or the dimensions and height of the building in which the spraying operation occurs, for emissions released inside of a building; and,
 - (viii) Average inward face velocity of the spray enclosure, as required by subparagraph (d)(1)(B), and the method and instrument used to measure the average inward face velocity; and,
 - (ix) Calculation of the length of time necessary to exhaust the volume of air required by clause (d)(1)(C)(i), if applicable; and,
 - (x) Source test results submitted pursuant to subdivision (g), if applicable; and,
 - (xi) Calculation of hexavalent chromium emissions from touch up and repair operations under subdivision (h), if applicable.
- (B) After review of the data submitted under subparagraph (d)(4)(A), the Executive Officer will notify facilities in writing whether the Compliance Plan is approved or disapproved. If a Compliance Plan is disapproved, the owner or operator shall resubmit the Compliance Plan, subject to plan fees specified in Rule 306, within 60 days after notification of disapproval of the Compliance Plan. The resubmitted Compliance Plan shall include the information required under subparagraph (d)(4)(A), and the owner or operator shall correct any deficiencies as identified in the Compliance Plan disapproval letter.
- (C) After review of the data in a Compliance Plan submitted pursuant to subparagraph (d)(4)(B), the Executive Officer will notify facilities in writing whether the Compliance Plan is approved or disapproved.
- (D) If a Compliance Plan submitted pursuant to subparagraph (d)(4)(C) is disapproved, the owner or operator shall comply with the requirements of subparagraph (d)(3)(B) within twelve months after notification that the Compliance Plan is disapproved.

- (E) Posting of Compliance Plan Approval Letter
 - (i) The Compliance Plan approval letter for equipment not subject to a facility permit under Regulation XXX or Regulation XX shall be mounted so as to be clearly visible in an accessible place within 8 meters (26 feet) of the spray booth enclosure identified in the Compliance Plan submitted under paragraph (d)(4), or as otherwise approved in writing by the Executive Officer.
 - (ii) The Compliance Plan approval letter for equipment subject to a facility permit under Regulation XXX or Regulation XX shall be kept with the facility permit, or as otherwise approved in writing by the Executive Officer.
- (F) The owner or operator of a facility shall comply with all conditions in an approved Compliance Plan.
- (5) Application Submittal for New Control Equipment or Permit Modification
Not later than July 1, 2006, an owner or operator of a facility shall submit to the Executive Officer complete application(s) for new control equipment or modification of existing control equipment, as specified in the Compliance Plan to meet the requirements specified in paragraph (d)(3).
- (6) Notification of Compliance
On or before July 1, 2007, the owner or operator of a source not required to submit a compliance plan pursuant to paragraph (d)(4) shall submit a Notification of Compliance to the Executive Officer. The Notification of Compliance shall include the following information:
 - (A) The facility name, address and contact person; and
 - (B) A statement, signed by a responsible official that the facility is in compliance with the requirements of subparagraph (d)(3)(B) or (d)(3)(C), as appropriate; and,
 - (C) Evidence of compliance with subparagraph (d)(3)(B) or (d)(3)(C), including but not limited to:
 - (i) Application or permit number of each source required under paragraph (d)(5); and,
 - (ii) A copy of the approval to use source test results submitted pursuant to clause (d)(4)(A)(x), if applicable; and,

- (iii) The approval date and approved cancer risk of a health risk assessment demonstrating compliance with subparagraph (d)(3)(C), if applicable; and,
- (iv) Emissions or risk calculations from all sources subject to this rule emitting hexavalent chromium, if applicable.

(7) Housekeeping

Effective July 1, 2005, the owner or operator of a source subject to this rule shall conduct spraying and cleanup operations in a manner that minimizes fugitive emissions of atomized paint particles, including but not limited to the criteria in subparagraphs (d)(7)(A) and (d)(7)(B).

- (A) When removing protective floor, wall or exhaust coverings within the spray booth enclosure, the operator shall:
 - (i) Operate the ventilation system; and,
 - (ii) Ensure that the door of a fully enclosed spray booth is closed; and,
 - (iii) Encapsulate those materials contaminated with primers or coatings containing chromium that are intended to be disposed of in a bag or container before removing from the spray booth.
- (B) The owner or operator of a source subject to this rule shall not operate the ventilation system when one or more filters, including HEPA filters are being removed or replaced.

(e) Emissions Inventory and Health Risk Assessment

- (1) The owner or operator of a facility complying with the requirements specified in subparagraph (d)(3)(C) that does not have an approved health risk assessment as of January 1, 2006, shall submit to Executive Officer not later than July 1, 2006, an emissions inventory and health risk assessment prepared pursuant to Rule 1402 for existing sources, and new sources where a permit application is submitted on or before January 1, 2006.
- (2) The facility-wide cancer risk of a health risk assessment submitted pursuant to paragraph (e)(1) shall be calculated in accordance with the Risk Assessment Procedures referenced in Rule 1402. Health risk from chromium spraying operations shall be presented:
 - (A) With existing controls; and

- (B) After installation of proposed controls, if appropriate, using the default filter efficiency listed in Table 1-2, or an alternate filter efficiency approved by the Executive Officer, or source test results approved by the Executive Officer, if applicable.
 - (3) After review of all data required under paragraphs (d)(4), (e)(1) and (e)(2), the Executive Officer will notify facilities in writing if the health risk assessment submitted under paragraphs (e)(1) and (e)(2) is approved or disapproved, and the approved cancer risk of the health risk assessment. If the approved health risk assessment conducted pursuant to paragraph (e)(1) results in a cancer risk that exceeds the cancer risk levels specified in subparagraph (d)(3)(C) or the health risk assessment is disapproved the owner or operator of a facility shall:
 - (A) submit an application for permit(s) to operate the control equipment required to meet subparagraph (d)(3)(B) within six months after the date of notification of the approved or disapproved health risk assessment; and
 - (B) comply with the applicable requirements of subparagraph (d)(3)(B) no later than 12 months after notification of the approved or disapproved health risk assessment.
 - (4) The owner or operator of a facility complying with the requirements of subparagraph (d)(3)(C), shall comply with enforceable conditions to ensure that the facility complies with the risk requirements specified in clauses (d)(3)(C)(i) or (d)(3)(C)(ii).
- (f) Addition of New Sources and Modification to Existing Sources
- (1) For permit applications submitted for new or modified existing sources after January 1, 2006 and on or before July 1, 2007, the owner or operator of facility shall demonstrate compliance with subparagraphs (d)(3)(A), (d)(3)(B), or (d)(3)(C) on or before July 1, 2007.
 - (2) After July 1, 2007, the owner or operator of a facility that submits a permit application for a new or modified existing source subject to this rule shall demonstrate compliance with paragraph (d)(3) upon submittal of the permit application. Demonstration of compliance with paragraphs (d)(3) shall require submittal of a:
 - (A) new compliance plan pursuant to paragraph (d)(3) if complying with the requirements of subparagraph (d)(3)(A); or

(B) revised emissions inventory and health risk assessment prepared pursuant to Rule 1402, if complying with the requirements of subparagraph (d)(3)(C).

(3) The owner or operator of a facility submitting a permit application for a new or modified existing source subject to this rule in which there is not an increase in emissions and in which there is not an increase in health risk at any receptor location shall not be required to comply with the requirements of paragraph (f)(2).

(g) Source Test Results

Results from a source test conducted for the purpose of demonstrating mass emissions from a new or existing source subject to this rule may be used as the basis for calculating facility emissions in order to demonstrate compliance with the emission limit in subparagraph (d)(3)(A) or to calculate emissions from spraying operations under clause (d)(4)(A)(iii). Unless otherwise approved in writing by the Executive Officer, the following criteria shall be met:

- (1) The source test protocol and source test report are approved by the Executive Officer prior to January 1, 2006; and,
- (2) Both total chromium and hexavalent chromium were measured during the source test; and,
- (3) The air pollution control equipment configuration is identical to the configuration when the equipment was tested; and,
- (4) The operating parameters of all affected air pollution control equipment are identical or substantially similar to the source tested equipment; and,
- (5) The chromate-containing primer or coating sprayed during the source test has the highest percentage by weight of chromium of any primer or coating currently sprayed at the facility.

(h) Exemptions

- (1) The requirements of paragraph (d)(1) shall not apply to any touch up and repair operation spraying coatings containing chromium that is conducted outside of a spray enclosure, provided the touch up and repair operation is not performed outside of a building, and emissions and cancer risk from the touch up and repair operation are calculated and included in an approved Health Risk Assessment which meets the risk levels specified in subparagraph (d)(3)(C).

- (2) The requirements of paragraph (d)(1) and (d)(2) shall not apply to any touch up and repair operation spraying coatings containing chromium that is conducted outside of a spray enclosure, provided the touch up and repair operation is not performed outside of a building; and
 - (A) Emissions from the touch up and repair operation are calculated in an approved Compliance Plan; and
 - (B) Total facility-wide emissions of hexavalent chromium from all spraying operations are demonstrated to be less than the level in subparagraph (d)(3)(A).

- (i) Compliance Test Methods
 - (1) Capture efficiency of the emissions collection system shall be determined by EPA Test Method 204 – Criteria for and Verification of a Permanent or Temporary Total Enclosure, or any other method approved by the Executive Officer.
 - (2) Transfer efficiency of alternative coating application methods under subparagraph (d)(2)(E) shall be determined in accordance with the SCAQMD method "Spray Equipment Transfer Efficiency Test Procedure for Equipment User, May 24, 1989", or subsequent revisions.

- (j) Recordkeeping Requirements
 - (1) Effective July 1, 2005, the owner or operator of a facility subject to this rule shall maintain records to demonstrate compliance with the applicable requirements in subdivisions (d) and (h). At a minimum, records shall include all of the following information:
 - (A) Purchase records of primers or coatings containing chromium used for spray coating operations; and
 - (B) Material Safety Data Sheets or Technical Data Sheets provided with the materials subject to the requirements of subparagraph (j)(1)(A) that indicate the weight percent of chromate(s) in the primer or coating, and the density of the primer or coating; and
 - (C) Daily usage records for each primer or coating subject to this requirement, applied or used daily; and
 - (D) Application method for each primer or coating used; and

- (E) Calculations conducted according to the procedures outlined in Appendix 1 and Appendix 2 that demonstrate annual mass emissions from each source subject to this rule, in pounds per year.
 - (2) The owner or operator of a facility subject to this rule shall maintain records to demonstrate compliance with the monitoring requirements of subdivision (k). The following parameters shall be recorded:
 - (A) The name of the person(s) performing the inspection and/or maintenance operations; and
 - (B) The date, time and results of the inspection; and
 - (C) The date, time and description of any maintenance activity or repairs resulting from the inspection; and
 - (D) The pressure drop across the air pollution control system filter media. Pressure drop shall be recorded once per week, for any week in which spraying operations using coatings containing chromium are conducted on one or more days.
 - (3) Records shall be kept in a format acceptable to the District for a minimum of three years and shall be made available to District personnel upon request.
- (k) Monitoring Requirements
- (1) Weekly Inspection of Air Pollution Control Equipment
The owner or operator of a facility subject to this rule shall perform a weekly visual inspection of the equipment and filter media subject to this rule for leaks, broken or torn filter media, and improperly installed filter media.
 - (2) Pressure Drop Across Air Pollution Control Equipment Filter Media
The owner or operator of a facility shall install a gauge to continuously monitor the pressure drop across the air pollution control equipment filter media. A gauge shall be located so that it can be easily visible and in clear sight of the operation or maintenance personnel. The pressure drop shall be maintained at or below the pressure drop prescribed by a permit condition, or by the manufacturer's recommended operating range if no permit condition limits pressure drop.

(l) Reporting Requirements

Annual Chromium Coatings Usage Report

The owner or operator of a facility with a source subject to this rule complying with subparagraph (d)(3)(A) or subparagraph (d)(3)(C) shall submit a report to the Executive Officer by September 1 each year with the following information:

- (1) Facility name, address and contact person; and,
- (2) Annual usage of each coating or primer containing hexavalent chromium for the previous fiscal year (July 1 through June 30), in gallons per year; and,
- (3) Chromate content of each coating or primer containing chromium used during the previous fiscal year (July 1 through June 30); and,
- (4) Permit number or application number of each spray booth used to spray chromium; and,
- (5) Usage of coatings or primers containing chromium in each spray booth used to spray chromium.

Appendix 1 - Emission Calculation Method

This Appendix establishes the emission calculation method that must be used in accordance with subparagraph (d)(3)(A) of Rule 1469.1, except for facility operators submitting source test results under subdivision (g), or an alternative procedure approved by the Executive Officer.

Emissions of hexavalent chromium from spraying operations must be calculated in accordance with the procedures specified.

Step 1: Identify all primers or coatings that contain chromium or chromate. Examples of chromates commonly formulated in coatings include strontium chromate, zinc chromate, lead chromate, calcium chromate and barium chromate.

Step 2: Determine the percentage by weight of chromate in each primer or coating. This data can be obtained from the Material Safety Data Sheet (MSDS) for the product, or by contacting the manufacturer. Chromate percentage may be given as a single value (ex: SrCrO₄ – 15%/wt), or it may be given as a range (ex: Zinc Chromate – 12%/wt - 22%/wt). Use the highest value to calculate emissions if chromate content in a primer or coating is given as a range.

Step 3: Determine the fraction of hexavalent chromium in the chromate. This is the molecular weight of chromium in the chromate, divided by the molecular weight of the entire chromate. All chromium in the chromate is assumed to be hexavalent. The hexavalent fraction of common chromates used in primers and coatings is given in Table 1-1.

Table 1-1 - Hexavalent Fraction of Common Chromate Primers

Chromate	Molecular Formula	Hexavalent Fraction
Barium Chromate	BaCrO ₄	0.205
Calcium Chromate	CaCrO ₄	0.333
Lead Chromate	PbCrO ₄	0.161
Strontium Chromate	SrCrO ₄	0.255
Zinc Chromate	ZnCrO ₄ ·7HOH	0.169

Step 4: Determine the density for each primer or coating used during the year. This data may be obtained from the Material Safety Data Sheet (MSDS) or the Technical Data Sheet (TDS) supplied with each primer or coating. Density data may be given in bulk density (ex: density = 9.2 lbs/gallon) or as specific gravity (ex: s.g. = 1.15). Multiply specific gravity by 8.34 to obtain bulk density.

Step 5: Compile the annual usage for each primer or coating sprayed during the year that contains chromium or chromate. Usage is the number of gallons of each primer or coating.

Step 6: Determine the control efficiency of the filters in your air pollution control (APC) system. A source test approved by the Executive Officer may be used, if both inlet and outlet concentrations of particulate matter were measured during the source test. Use the default control efficiencies in Table 1-2 if no source test data are available. If more than one type of filter is used in series to control emissions (ex: blanket-type filter followed by two-stage NESHAP-compliant filters), only consider the highest rated control efficiency.

Table 1-2 - Default Control Efficiencies

Control Equipment	Control Efficiency
Conventional Spray Booth Filters	90%
Water-wash Booth	
Two-stage Aerospace NESHAP-compliant Filters	
Pocket-type Filters	
Accordion Filters	95%
Three-stage Aerospace NESHAP-compliant Filters	
Cartridge Filters	99%
Bag House	
High Efficiency Particulate Arrestor (HEPA) Filters (individually dioctyl phthalate (DOP) or equivalent tested)	99.97%

Note: If a filter manufacturer guarantees a control efficiency higher than the default values in Table 1-2 for the type of filter media in use (for particulate sizes greater than 0.3 microns), submit the manufacturer's test data with your Compliance Plan for consideration. The actual control efficiency used to evaluate your Compliance Plan is up to the discretion of The Executive Officer, based on the data presented.

Step 7: Calculate hexavalent chromium emissions, after existing control equipment, for each primer or coating containing chromium or chromate used during the year.

$$\text{Emissions (lbs/yr)} = [\text{Usage (gallons/yr)}] * [\text{Coating Density (lbs/gal)}] * [\text{Chromate Content (\%/wt)}] *$$

$$\begin{aligned} & [\text{Hexavalent Fraction of Chromate}] * \\ & [1 - \text{Transfer Efficiency (\%)}] * \\ & [1 - \text{Filter Efficiency (\%)}] \end{aligned}$$

Use 65% transfer efficiency unless another transfer efficiency has been approved by the Executive Officer. Provide a separate calculation for each primer or coating that contains chromate used at your facility during the calendar year.

Step 8: Sum emissions from each primer or coating sprayed at your facility during the year that has chromium or chromate.

**Appendix 2 – Distance-Adjusted Annual Emission Levels For Facilities
Located More Than 25 Meters (82 ft) from a Residence or Sensitive Receptor.**

Facilities complying with the facility-wide emission limit in clause (d)(3)(A) may adjust the annual emission limit, according to actual receptor distance. Use the following tables to determine the appropriate annual emissions for compliance with the limits in subparagraph (d)(3)(A), according to the distance to the nearest receptor. The nearest receptor includes **commercial, industrial, sensitive** and **residential** receptors. Use Table 2-1 for the distance measurement criteria, and use Table 2-2 to look up the emission limit for the nearest commercial/industrial receptor, and for the nearest sensitive/residential receptor. The allowable emission limit for your facility is the lower of the two values.

Receptor distance is measured as follows:

**Table 2-1
Measuring Receptor Distance**

Source Type	Measure From:	Measure To:
Single Stack Venting Chrome-Spraying Process(es)	Stack	Property Line of Nearest Receptor
Multiple Stacks Venting Chrome-Spraying Process(es)	Centroid of Stacks	Property Line of Nearest Receptor
Emissions Released Inside of Building	Center of Building	Property Line of Nearest Receptor

Table 2-2
Distance-Adjusted Hexavalent Chromium Emissions For Equipment
Subject to Subparagraph (d)(3)(A)

Distance to Nearest Receptor	Meters	>25	30	35	40	45	50	55	60
	Feet	>82	98	115	131	148	164	180	197
Spray Booth Operating Schedule	Nearest Receptor Type	Distance-adjusted Annual Emission Limit (lbs/yr)							
12 Hrs/Day or Less	Residential or Sensitive	0.018	0.019	0.02	0.022	0.024	0.027	0.029	0.032
More Than 12 Hrs/Day	Residential or Sensitive	0.032	0.032	0.032	0.032	0.032	0.032	0.034	0.036
12 Hrs/Day or Less	Commercial or Industrial	0.021	0.023	0.025	0.027	0.029	0.032	0.035	0.039
More Than 12 Hrs/Day	Commercial or Industrial	0.038	0.038	0.038	0.038	0.038	0.038	0.041	0.043

Distance to Nearest Receptor	Meters	65	70	75	80	85	90	95	100
	Feet	213	230	246	262	279	295	312	328
Spray Booth Operating Schedule	Nearest Receptor Type	Distance-adjusted Annual Emission Limit (lbs/yr)							
12 Hrs/Day or Less	Residential or Sensitive	0.037	0.042	0.049	0.053	0.058	0.064	0.071	0.081
More Than 12 Hrs/Day	Residential or Sensitive	0.039	0.042	0.045	0.048	0.051	0.055	0.059	0.064
12 Hrs/Day or Less	Commercial or Industrial	0.044	0.05	0.059	0.064	0.07	0.077	0.086	0.097
More Than 12 Hrs/Day	Commercial or Industrial	0.047	0.05	0.055	0.058	0.062	0.066	0.071	0.077